

REMARKS

In the Office Action, claims 18, 21, 28, 29, and 37 are objected to because of informalities.

In the Office Action, claims 13, 15-18, and 20-38 are rejected under 35 U.S.C. §102(b) as being anticipated by U.S. Patent No. 5,750,926 to Schulman et al.

In response thereto, claims 15 and 21 have been amended. Accordingly, claims 13, 15-18, 20-38 are now pending. Following is a discussion of the patentability of each of the pending claims.

Preliminary Matter

With regards to the objection of claims 18, 28, 29, and 37, no amendments have been made because these claims do not recite the term “substantially.”

In response to the objection of claim 21, in line 1, “14” has been replaced with -- 13--. Accordingly, withdrawal of the objection to claim 21 is respectfully requested. It is noted that claim 15 has been amended to correct a similar problem. Acceptance of the amendment to claim 15 is respectfully requested.

Independent Claim 13

Claim 13 recites a sensor device implantable in a living body. The sensor device comprises: a bond wire connected to an electrical conductor and a sensor, wherein the bond wire is embedded in an insulative sheath; and a thin film of hermetic material encapsulating the sensor and the substrate. An inner surface of the thin film directly contacts an outer surface of the sensor and an outer surface of the substrate to form a voidless encapsulation of the sensor and the substrate. An example of such a configuration is illustrated in Figure 3 of the present application, wherein the thin film of hermetic material (52) encapsulates the sensor (46) and the insulating substrate (30).

The Schulman et al. reference is directed to thin hermetically sealed electrical feedthroughs that permits electrical connection between electronic circuits sealed

within a hermetically sealed case and electrical terminals or contacts on the outside of the case. The hermetically sealed case is made by hermetically bonding a cover (40) or lid (82) to an insulating layer (see Figures 1, 2, 3, and 5). At least two spaced-apart openings are formed in the insulating layers before bonding the cover, exposing a conductive trace. Additional conductive material is inserted within each of the openings or holes so as to form conductive vias (35) residing inside of a hermetically sealed cavity (42) formed under the cover.

The Schulman et al. reference does not disclose or suggest a thin film of hermetic material encapsulating a sensor and substrate, wherein an inner surface of the thin film directly contacts an outer surface of the sensor and an outer surface of the substrate to form a voidless encapsulation of the sensor and the substrate. The Final Office Action takes the position that an intermediate insulating layer (110) and a bottom insulating layer (120) are viewed as a “thin film of hermetic material encapsulating the sensor (50) and the insulating substrate (100) (see Figures 4 and 5). It is noted that neither the intermediate insulating layer nor the bottom insulating layer encapsulate the sensor and the substrate. Merriam Webster's Collegiate Dictionary (Tenth Edition) defines encapsulate as “to enclose in or as if in a capsule,” and capsule is defined as “a membrane or sac enclosing a body part.” The intermediate layer directly covers a bottom surface of the top insulating layer (100), but the top surfaces of the top insulating layer and the sensor are not covered by the intermediate layer. As such, the intermediate layer does not enclose in or as if in a capsule.

It is further noted that the neither the intermediate insulating layer nor the bottom insulating layer comprise an inner surface directly contacting an outer surface of the sensor and the outer surface of the insulating substrate to form a voidless encapsulating of the sensor and the insulating substrate. In accordance with claim 13 of the present application, the thin film is a hermetic material that encapsulates the sensor and the insulating substrate. In the various embodiments disclosed in the Schulman et al. reference, a metal cover (40) or lid (82) hermetically seals the sensor and the insulating substrate. However, a cavity is formed between an inner surface of the metal cover or lid and the insulating substrate and the sensor. As such, an inner

surface of the cover or lid does not directly contact an outer surface of the sensor and the outer surface of the insulating substrate to form a voidless encapsulation of the sensor and the insulating substrate.

Furthermore, the Schulman et al. reference does not disclose or suggest a bond wire connected to an electrical conductor and to a sensor. In the various embodiments disclosed in the Schulman et al. reference, conductive vias (35, 105) connect electrical conductors (32, 113) to the electronics (50, 52).

Accordingly, it is respectfully submitted that claim 13 is in condition for allowance.

Dependent Claims 14-18, 20, and 21

Claims 14-18, 20, and 21 depend from claim 13 and are similarly patentable.

Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 22

For at least some of the reasons discussed above with regards to claim 13, it is respectfully submitted that claim 22 is in condition for allowance. Furthermore, the Schulman et al. reference does not disclose or suggest an implantable lead connected to a pulse generator. The external leads (96) illustrated in Figure 3 of the Schulman et al. reference are electrically conductive pins commonly used in the chip packaging technology whereas the implantable lead recited in claim 22 of the present application is directed to leads for pacing and sensing a heart as illustrated in element 20 of Figure 1 of the present application.

Dependent Claims 23-30

Claims 23-30 depend from claim 22 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

Independent Claim 31

For at least the same reasons discussed above with regards to claim 22, it is respectfully submitted that claim 31 is in condition for allowance.

Dependent Claims 32-38

Claims 32-38 depend from claim 31 and are similarly patentable. Accordingly, it is respectfully submitted that these claims are in condition for allowance.

CONCLUSION

In light of the above claim amendments and remarks, it is respectfully submitted that the application is in condition for allowance, and an early notice of allowance is requested.

Respectfully submitted,

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